

FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE
(Rev. 2-32) PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO.

10164-1 (125-497)

SERIAL NO.

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APPLICANT
Liu et al.

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U.S. PATENT DOCUMENTS

| EXAMINER INITIAL | DOCUMENT NUMBER | DATE | NAME | CLASS | SUB CLASS | FILING DATE IF APPROPRIATE |
|---------------------|--------------------|----------|----------------|-------|--------------|----------------------------------|
| WG | 3,911,041 | 10/07/75 | Kaeding et al. | 260 | 682 | |
| WG | 3,939,058 | 02/17/76 | Plank et al. | 208 | 120 | |
| WG | 3,972,832 | 08/03/76 | Butter et al. | 252 | 437 | |
| WG | 4,141,859 | 02/27/79 | Plank et al. | 252 | 455 | |
| WG | 4,171,257 | 10/16/79 | O'Rear et al. | 208 | 120 | |
| WG | 4,251,348 | 02/17/81 | O'Rear et al. | 208 | 61 | |
| WG | 4,282,085 | 08/04/81 | O'Rear et al. | 208 | 120 | |
| WG | 4,347,121 | 08/31/82 | Mayer et al. | 208 | 58 | |

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| EXAMINER INITIAL | DOCUMENT NUMBER | DATE | COUNTRY | CLASS | SUB CLASS | TRANSLATION | |
|---------------------|-----------------|----------|---------|-----------------|------------------|-------------|----|
| | | | | | | YES | NO |
| WG | EP 0 347 003 B1 | 12/20/89 | EPO | G10G | 11/05 | | |
| WG | EP 0 372 632 B1 | 06/13/90 | EPO | G10G | 69/04 | | |
| WG | EP 0 385 538 B1 | 09/05/90 | EPO | G10G | 11/16 | | |
| WG | EP 0 490 435 B1 | 06/17/92 | EPO | G10G | 11/05 | | |
| WG | WO 98/03612 | 01/29/98 | PCT | G10G | 11/00 | | |

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| WG | | "The Paragon Process: A New Hydrocracking Concept", D. J. O'Rear, Ind. Eng. Chem. Res. 26:2337-2344 (1987). |
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EXAMINER *W. B. Jeff*DATE CONSIDERED *5-30-2000*

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|---------------------|--------------------|----------|----------------|-------|--------------|----------------------------------|
| WG | 4,390,413 | 06/28/83 | O'Rear et al. | 208 | 61 | |
| WG | 4,423,266 | 12/27/83 | Young | 585 | 481 | |
| WG | 4,436,614 | 03/13/84 | Olbrich et al. | 208 | 89 | |
| WG | 4,502,945 | 03/05/85 | Olbrich et al. | 208 | 120 | |
| WG | 4,582,815 | 04/15/86 | Bowes | 502 | 64 | |
| WG | 4,590,321 | 05/20/86 | Chu | 585 | 415 | |
| WG | 4,918,256 | 04/17/90 | Nemet-Mavrodin | 585 | 415 | |
| WG | 4,980,053 | 12/25/90 | Li et al. | 208 | 120 | |

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| | | | | | | YES | NO |
| WG | EP 0 385 538 A1 | 09/05/90 | EPO | 6106 | 11/16 | | |

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| WG | | | "Cracking of FC and Coker Naphthas by ZSM-5 Catalyst and Equilibrium FC Catalyst", Hsing et al., Symposium on Hydrogen Transfer in Hydrocarbon Processing, Div. Of Petroleum Chemistry Inc., 208th Meeting, Am. Chem. Soc. Washington, D.C., p. 388-392 (1994). |
| WG | | | "Deep Catalytic Cracking Plant Produces Propylene in Thailand", Oil & Gas Journal, p. 49-53 (1998). |
| WG | | | "Deep Catalytic Cracking, Maximize Olefin Production", Chapin et al, NPRA Annual Meeting, AM-94-43, p.1-14 (1994). |

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| WG | 5,019,664 | 05/28/91 | Del Rossi et al. | 585 | 419 | |
| WG | 5,026,936 | 06/25/91 | Leyshon et al. | 585 | 315 | |
| WG | 5,053,374 | 10/01/91 | Absil et al. | 502 | 64 | |
| WG | 5,171,921 | 12/15/92 | Gaffney et al. | 585 | 653 | |
| WG | 5,182,242 | 01/26/93 | Marler | 502 | 66 | |
| WG | 5,292,976 | 03/08/94 | Dessau et al. | 585 | 322 | |
| WG | 5,348,643 | 9/20/94 | Absil et al. | 208 | 114 | |
| WG | 5,380,690 | 01/10/95 | Zhicheng et al. | 502 | 65 | |
| WG | 5,389,232 | 02/14/95 | Adewuyi et al. | 208 | 120 | |

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| WG | | | "DCC Flexibility for Isoolefins Production", Li et al., Symposium on Advances in Fluid Catalytic Cracking, Division of Petroleum Chemistry, Inc. 206th National Meeting, Am. Chem Soc. Chicago, p. 581-583 (1993). | | | | |
| WG | | | "DCC - A New Propylene Production Process from Vacuum Gas Oil", Zaiting et al., National Petroleum Refiners Association", AM-90-40, p. 1-14 (1990) | | | | |

EXAMINER *M. Ruff* DATE CONSIDERED 5-30-2000

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| WG | 5,456,821 | 10/10/95 | Absil et al. | 208 | 114 | |
| WG | 5,472,594 | 12/05/95 | Tsang et al. | 208 | 114 | |
| WG | 5,637,207 | 06/10/97 | Hsing et al. | 208 | 164 | |
| WG | 5,670,037 | 9/23/97 | Zaiting et al. | 208 | 114 | |

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| WG | | | "Commercial Trial of DCC (Deep Catalytic Cracking) Process for Gaseous Olefins Production", Xieqing et al., Research Institute of Pet. Proc., SINOPEC (undated) | | | | |
| WG | | | "Deep Catalytic Cracking for Light Olefins", Chapin et al., Presented at Fifth World Congress of Chemical Engineering, San Deigo (1996). | | | | |
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EXAMINER *W. B. Smith*

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